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ORIGINAL

March 2, 2000

EX PARTE OR LATE FILED

NOTICE OF EX PARTE PRESENTATION

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
445 Twelfth Street, S.W., TW-A325
Washington, D.C. 20554

RE: In the Matter of Applications for Consent to the Transfer of Control of Licenses and Section 214 Authorizations from Ameritech Corporation, Transferor, to SBC Communications Inc., Transferee.
CC Dkt No. 98-141

Dear Ms. Salas:

Please be advised that the attached information was provided to Mr. Anthony Dale of the Common Carrier Bureau in response to staff questions regarding SBC's February 15, 2000 letter to Mr. Larry Strickling requesting an interpretation of the SBC/Ameritech Merger Conditions with respect to ownership of combination ADLU plugs/cards and Optical Concentration Devices (OCDs).

In accordance with the Commission's rules, an original and one copy of this notification are submitted herewith.

Sincerely,

Marian Dyer

Attachment
cc: Mr. Dale

Marian Dyer
Vice President-Federal Regulatory

SBC Telecommunications, Inc.
1401 I Street, N.W.
Suite 1100
Washington, D.C. 20005
Phone 202 326-8835
Fax 202 408-4805

March 1, 2000

Mr. Anthony J. Dale
Federal Communications Commission
445 12th Street, SW, Room 6-C431
Washington, DC 20554

Dear Mr. Dale:

Re.: CC Docket 98-141---Ownership of Plugs/Cards and OCDs

With respect to SBC's February 15, 2000 letter to Mr. Larry Strickling on the above referenced subject, enclosed is information you requested from Paul Mancini. Enclosed is the following:

- Information on the OCDs entitled "CBX 500 Product Overview" and "CBX 500 Multiservice WAN Switch".
- Information on the combination ADLU cards, starting with paragraph 4.3.3 "Dual-Line DMT ADLU with POTS".
- A brief explanation of the tax issue.

Sincerely,

Marian Dyer

CC: Mr. Mancini

Lucent Technologies
Bell Labs Innovations

CBX 500
Product Overview

The CBX 500 Multiservice ATM switch delivers on the vision of ATM with the Frame Relay and IP service capabilities required to build the New Public Network. The CBX 500 delivers leading-edge ATM features with integral high-speed Frame Relay and IP switching access. The CBX 500 offers an advanced, versatile multiservice switch platform that will allow providers to take advantage of the expanding data communications opportunities that lie ahead.

Modular architecture protects investment

The CBX 500 Multiservice ATM switch is a high-performance cell switch based on crosspoint technology as its core switch fabric. The CBX 500 assures seamless integration with the features of the GX 550 and B-STDX family of switches to build multiservice networks.

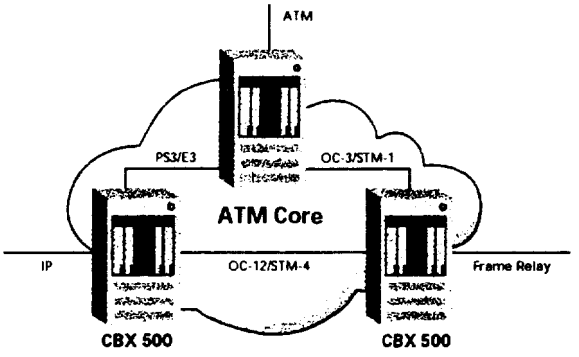
- High-performance, high-capacity multiservice ATM switch
- Integral ATM, high-speed Frame Relay and IP service capability
- IP Navigator support
- Sophisticated Virtual Network Navigator (VNN) topology management for network-wide guaranteed Quality of Service (QoS)
- Advanced traffic management and sophisticated Connection Admission Control (CAC) algorithm for increased network resource utilization

Advanced switch processor delivers platform-wide system coordination

The CBX 500 switch processor incorporates a silicon-based Quad-Plane crosspoint matrix switching fabric for traffic isolation. The Model 10 switching fabric offers up to 5 Gb/s of nonblocking switching capacity consisting of a 4x4 matrix that runs at 640 Mbps for a capacity of 1.5 Gb/s nonblocking 64K cell buffers. The Model 20 switching fabric offers an output-buffered, self-routing, 8x8 matrix for individual ports that run at 640 Mbps for a total capacity of 5 Gb/s, nonblocking, 128K cell buffers. Each port contains buffering that creates five distinct QoS traffic queues: CBR, rtVBR, nrtVBR, ABR/UBR and UBR+.

An i960 microprocessor subsystem ensures platform-wide system coordination, participation in distributed management, routing signaling and traffic management. The switch provides three

CBX Multiservice Application



The CBX lets service providers offer ATM with Frame Relay and IP service capabilities

software-selectable clock source options: internal, recovered from ATM trunks or external.

- Multiprocessor and custom-silicon design for highest performance and throughput
- Quad-Plane switch architecture with 128K cell buffers to ensure the highest level of data integrity

Industry-standard PCMCIA peripheral port support ensures compatibility

The CBX 500 supports an industry-standard PCMCIA interface to support an Ethernet interface for network management and control. In addition, it supports a redundant hard disk that contains software images for the ATM switch processor and I/O modules as well as an RS-232 connection for an external modem dial-in alternative for out-of-band remote network management.

- Ethernet interface for network management and control
- External modem for out-of-band remote network management

I/O modules offer the industry's highest port density and price/performance

The CBX 500 supports both 8-port T3/E3 and 4-port OC-3c/STM-1 modules and a single-port OC-12/STM-4 module. A midplane architecture is used to attach I/O modules to the physical port connector panels. The I/O modules offer wire-speed data throughput, 16K point-to-multipoint connections per switch and large data buffering with 8K cell buffer per T3/E3 port and 24K cell buffer per OC-3c/STM-1 ports.

- Single-platform port density: up to 112 T1/E1, T3/E3, 56 OC-3c/STM-1 and 14 OC-12/STM-4 connections
- Up to 96,000 additional cell buffers per I/O module
- 64,000 additional cell buffers for optional per-Virtual Circuit (VC) queuing
- Up to 16,000 VCs (SVCs, PVCs, PVPs) per I/O module

Specifications

Interface Specifications

Supports 8-port T3/E3 ATM UNI module, 8-port T1/E1 UNI, 4-port OC-3c/STM-1 ATM UNI module

Multiservice: 6-port T3/E3 Frame Relay/IP; 4-port 10/100 Mbps Ethernet (IP)

Individual interface configurations: UNI 3.0, UNI 3.1; Lucent trunk; PNNI IISP; PNNI Phase 1; B-ICI; Indirect trunk

Ethernet interface for management

T3/E3 ATM (44.735 Mbps) with PLCP or HEC cell delineator

SONET/SDH single-mode/multimode fiber, OC-3c/STM-1 (155.52 Mbps), OC-12/STM-4 (622 Mbps) medium reach and long reach

ATM MIB support specifications

Physical Dimensions Size:
19.0 in x 33.25 in x 15.0 in
[48.26 cm x 84.46 cm x 38.1 cm]

Weight:
Less than 200 lbs. [90.7 kg] fully configured

Rack Mounting Options
EIA 19-inch or 23-inch midmount, central office style

Power Requirements
AC Power: Autoranging 100 to 240 AC

DC Power: -48 to -60 volts DC

Current: 12 amps @ 120 volts AC; 45 amps @-48 volts DC

Agency Approvals
Environmental
-GR-63-CORE
-GR-1089-CORE

EMC
-FCC Part 15 Class A
-EN55022 Class A

Safety

-UL 1950
-CAS 950

Thermal Dissipation
Maximum: 1400 watts per power supply

Temperature Range
Degrees: 32-122° F (0-50° C)

To learn more, contact your Lucent Technologies Representative, Authorized Reseller, or Sales Agent. Or, visit our Web sites.
www.lucent.com
www.lucentnetworks.com

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CBX 500 Multiservice WAN Switch

Building Block for Next-Generation Networks

The challenge facing service providers today is how to provide a new network infrastructure that is optimized for information transport. Not only must service provider networks move an increasing volume of data at higher speeds—they must move the data intelligently and reliably, with end-to-end quality of service (QoS). Providing voice, video, and data on a single infrastructure, next-generation networks must also position providers for delivering emerging, premium service offerings with a lower cost of operations.

CBX 500 Multiservice WAN Switch

The CBX 500™ Multiservice WAN Switch leads the industry in the carrier-class capabilities needed to build next-generation networks.

The advanced modular architecture of the CBX 500 switch allows you to offer ATM, frame relay, and IP services on a single, high-capacity platform, reducing the time spent provisioning and lowering operation costs. And, the CBX 500 switch offers a suite of features designed to allow for the highest levels of availability in the industry.

Scalability to Meet Your Growing Needs

The 5 Gbps CBX 500 switch scales performance to meet your needs as your customer base grows and their customer requirements escalate.

Scalable port capacity and density. The CBX 500 switch provides scalable port capacity for deploying multiple services and line speeds to your customers. Using the CBX 500 Multiservice WAN Switch to deliver unmatched port density for both end-user and trunk ports, you can cost-effectively increase your subscriber density, while you conserve valuable Central Office (CO) and Point of Presence (POP) space. Interface speeds range from DS0/64 Kbps to OC-12/STM-4.

Distributed processing architecture. The CBX 500 distributed processing architecture provides additional processing power as you increase subscriber capacity. Distributed processing functions such as connection signaling, virtual circuit (VC) routing, IP label switch forwarding, and connection admission control (CAC) allow you to deploy network nodes and services on the largest scale.

Efficient use of bandwidth. To ensure the most efficient use of available bandwidth, the CBX 500 switch supports up to 16,000 virtual connections per I/O module. Using hardware-based cell replication, it also supports up to 16,000 multicast VCs per switch. And, each switch can support as many as 224,000 connections – both virtual channel connections (VCCs) and virtual path connections (VPCs).

The Performance and Reliability You Require

As voice, data, and video converge onto a single infrastructure, network performance becomes critical. Just as critical is the high reliability of those services.

See Figure 1.

Signaling performance. The CBX 500 switch achieves astonishing connection signaling performance of up to 3,000 connection requests per second by employing highly reliable distributed processing, with a dedicated switched virtual circuit (SVC) signaling capacity on every line card. Many ATM switches employ a central signaling processor that must be shared by all connection requests. The distributed processing of the CBX 500 switch ensures that signaling performance scales with port density.

QoS and Traffic Management. Due to its quad-plane switch architecture, the CBX 500 switch supports diverse traffic types with guaranteed QoS for voice, video, and bursty data. This architecture provides separate, dedicated output buffer pools for each QoS class:

- Constant Bit Rate (CBR)
- Real-time Variable Bit Rate (rt-VBR)
- Non-real-time Variable Bit Rate (nrt-VBR)
- Available Bit Rate (ABR)
- Unspecified Bit Rate (UBR)

Buffering on both the switch fabric and the I/O modules ensures that QoS guarantees are met even during network congestion. The distributed CAC algorithm maintains the QoS objective by providing QoS-aware admission to the network, with automatic output queue scheduling as connections are established in the network.

See Figure 2.

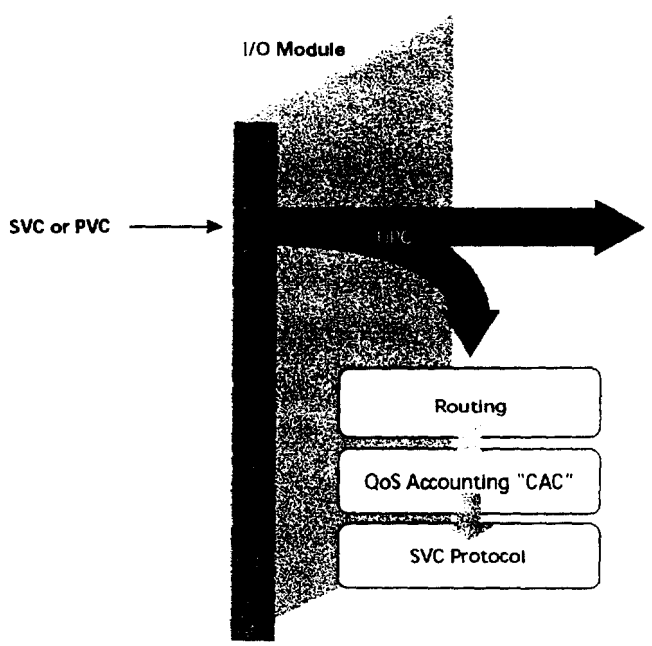
Continuous Network Uptime

Continuous network uptime and resiliency are ensured by complete hardware redundancy and the distributed quad-plane architecture, as well as features such as automatic protection switching (APS) for SONET/SDH interfaces, Rapid Upgrade™, PVC Redirect, and Resilient Network to Network Interfaces (NNIs).

- Automatic Protection Switching. Lucent 1+1 SONET/SDH APS provides millisecond recovery from fiber transmission facility failures and I/O module failure. Upon detecting failure based on SONET/SDH K1/K2 byte signaling, the CBX 500 switch automatically switches all circuits and data from the failed port to a protected port.
- Rapid Upgrade. This feature allows for switch software updates without switch service outage. New services can be deployed more rapidly, without costly downtime.
- PVC Redirect. For fast disaster recovery, the PVC Redirect feature quickly and automatically connects users to a backup facility upon detecting failure on the primary logical port.
- Resilient NNI. This feature ensures that carrier-to-carrier connections are highly fault tolerant by switching to backup NNI links based on facility failures.

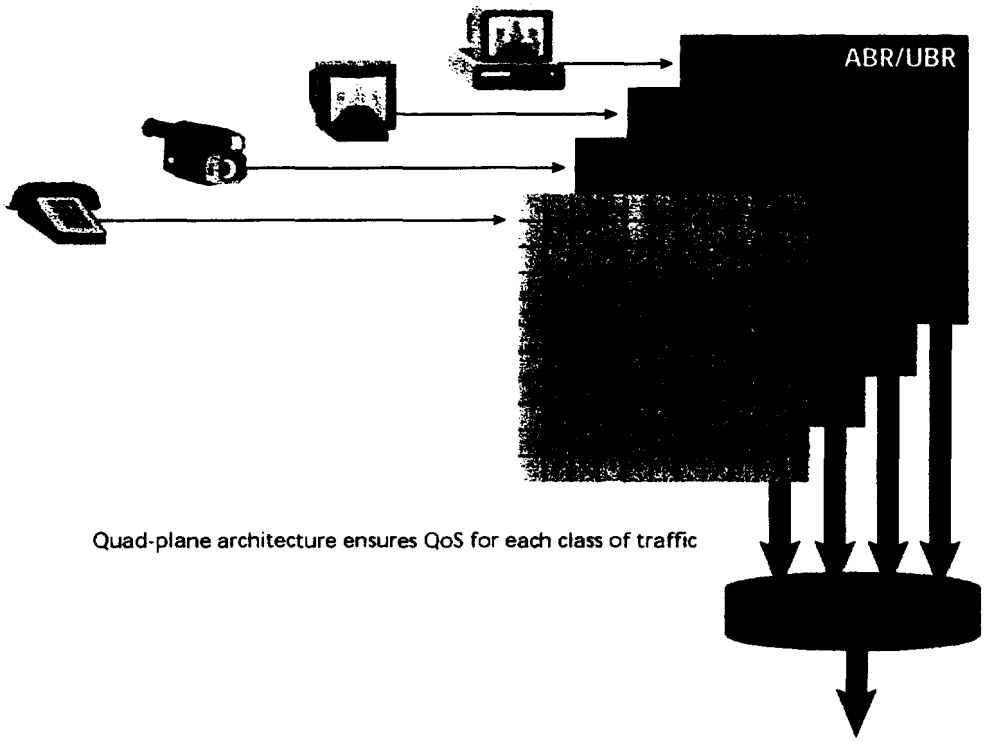
Service redundancy. To deliver carrier-class availability, the CBX 500 switch gives your network service redundancy. Switching and routing are distributed to each I/O card, eliminating any single point of failure. The backup switch fabric on the CBX 500 switch automatically switches from standby to active in a fraction of a second—with minimal or no loss of data.

Figure 1



Distributed signaling on the CBX 500 I/O modules ensures signaling performance scales with port density.

Figure 2



Quad-plane architecture ensures QoS for each class of traffic

Rapid Service Provisioning and High Availability with Virtual Network Navigator

Virtual Network Navigator (VNN) offers a unique edge for building reliable, scalable network solutions. VNN is a multiservice QoS-aware connection routing technology based on the Internet routing protocol OSPF. VNN solves the problem of distributed topology management and provides fast convergence after network changes. Distributed on all I/O modules on the CBX 5000 switch, VNN is the multiservice routing engine for Frame Relay, ATM and IP.

To safeguard connection reliability, VNN accomplishes two goals. First, it dynamically finds a path through the network to guarantee a connection's QoS. Second, when there is a network (link or switch) failure, the VNN routing manager automatically reroutes connections around the failure in a distributed, scalable fashion. VNN maintains carrier-class reliability—and a satisfied customer base.

Service providers can choose to run standard ATM routing protocols, either standalone or in conjunction with VNN. Lucent VNN is fully interoperable with the ATM routing protocols PNNI, IISP, and B-ICI, ensuring compatibility with standards-compliant equipment from other vendors.

See Figure 3.

Advanced Traffic Management

Traffic management becomes critical as the volume of data increases and the end-user's need for QoS grows. The CBX 500 switch solves this traffic management challenge with features that allow providers to meet QoS contracts while delivering maximum link utilization and ensuring the lowest possible operational costs.

Connection Admission Control. Efficient use of bandwidth is a competitive advantage for service providers. Lucent CAC maintains a precise real-time accounting of the bandwidth available for the various classes of services. Distributed to all I/O modules, our dynamic CAC algorithm handles policing as well as programming a weighted round robin scheduler to deliver the QoS objectives of each connection. CAC operates with Lucent VNN to find available bandwidth for new connection requests, while maintaining QoS for the existing connections.

Policing traffic flow. Traffic management polices ATM VCs to ensure that they conform to the negotiated QoS traffic contract. This is accomplished with the Lucent Technologies unique silicon-based version of the ATM Forum's "Dual Leaky Bucket" usage parameter control (UPC). The UPC enforcement algorithm works on a per-VC basis to control ATM traffic entering the network.

Lucent integrates large cell buffers in the switch fabric and on the I/O modules to handle non-real-time bursty data traffic. In addition, Lucent offers an optional dedicated flow control processor subsystem for each I/O module. This Traffic Management 4.0-compliant subsystem provides all the essential elements for ABR, UBR, or UBR+ service, including the following features:

- Per-VC Queuing
- Early Packet Discard and Partial Packet Discard (EPD/PPD)
- Rate-based Flow Control
- Traffic Shaping

ATM OPTimum trunk. The ATM OPTimum™ Trunk logical port type provides connectivity between two Lucent WAN switches via another ATM network. When traversing another network, the outside provider provisions a VPC that carries the Lucent trunk traffic (including all associated trunk protocol, management data, PVCs, and SVCs) between the two Lucent switches. Network policing and traffic shaping of the aggregate OPTimum trunk rate allow control of cell loss through the other ATM network. This feature allows service providers that are not facilities-based to select the most cost-effective bandwidth source—direct leased line or broadband virtual path service—to connect switches. It also provides a simplified transition from existing ATM switches to Lucent switches, by allowing the Lucent network to overlay the existing network.

Powerful Network Management Control with Navis

The Navis family—NavisCore™ and NavisXtend™—provides fully integrated, end-to-end management of ATM, frame relay, and IP services across all Lucent broadband switching products. The NavisCore distributed management solution provides network configuration, performance monitoring, and service management capabilities. Based on industry-standard Internet protocols—including SNMP, FTP, and Telnet—and open application programming interfaces (API), NavisCore and NavisXtend ensure interoperability with other management systems and tools.

The NavisXtend suite of network management applications enables service providers to reduce overhead costs, improve network efficiency, and deliver new services to their customers through distribution of key network management functions to appropriate servers in the network. Applications include the following:

Provisioning Server provides open C++ API and SNMP MIB interfaces for the integration of Navis functions into your existing operations and support systems or for the development of custom network management tools compatible with Navis.

Statistics and Report Generator Servers provide service-level performance tracking and traffic engineering management data collection and reporting.

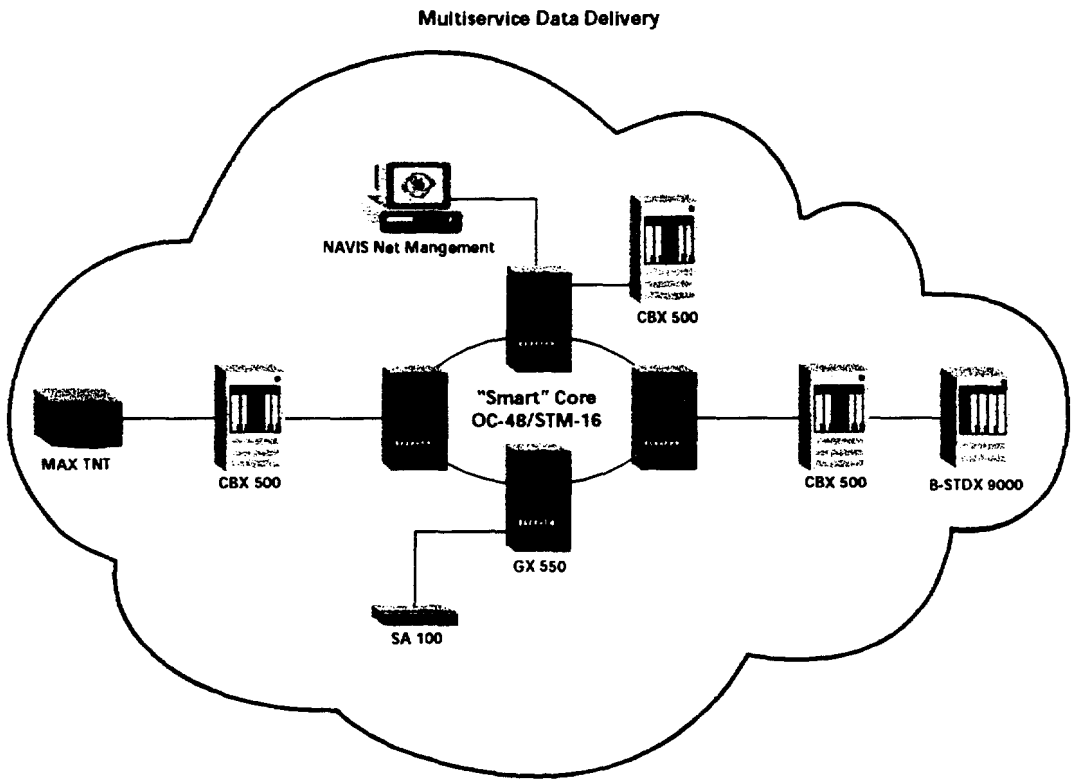
CNM Gateway is a Web-based, turnkey Customer Network Management solution that provides your customers with configuration, fault, and performance management control of their virtual private networks (VPNs).

One Infrastructure for Multiple Services

The Lucent CBX 500 switch delivers native ATM services, the industry's highest port density for frame relay, and Quality IP services with IP Navigator MPLS—all from a single CBX 500 platform.

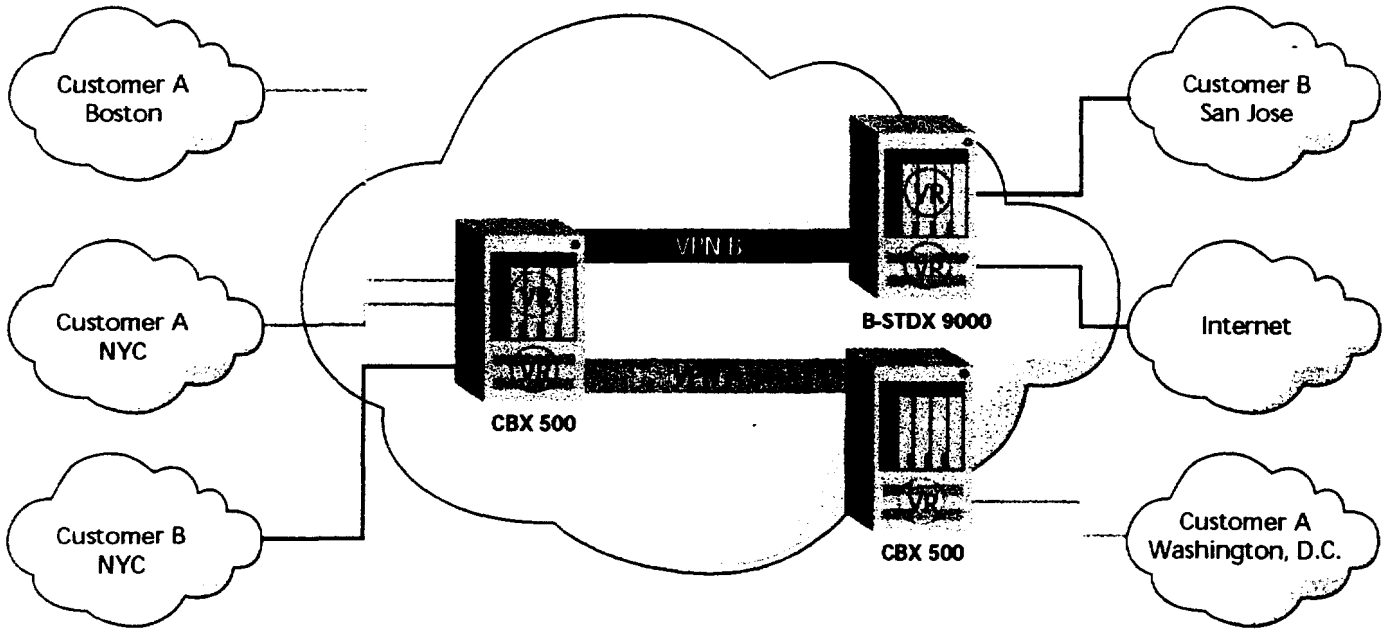
Multiservice ATM. Service providers depend on their ATM networks to serve as the backbone network for PVC and SVC ATM services, cable modem termination systems, Digital Subscriber Line (DSL) access multiplexers, mobile telephony switching systems, and large frame relay networks. The CBX 500 switch can serve

Figure 3



VNN is a sophisticated technique that distributes routing intelligence to each switch, providing each I/O module with a full topological view of the network.

Figure 4



Multiservice data delivery for ATM, Frame Relay, and IP.

as the ATM core infrastructure for network backbones up to OC12/STM-4. As the requirements expand, the Lucent GX 550 provides higher scalable port density and higher backbone trunking capacity for transforming circuit-switched PSTN voice networks into more manageable packet-switched networks. ATM is the only technology to deliver all these services from a single infrastructure—all at the same time.

You can effectively leverage their investment in CBX switches as you evolve your network to take advantage of the greater densities and revenue-generating service capabilities delivered by the latest CBX I/O modules. For example, you migrate existing CBX 500 switches from core network deployment and delivery of ATM services, to delivery of additional frame relay and IP MultiProtocol Label Switching (MPLS) services, as the backbone continues to scale with greater capacity using GX 550 switches. See Figure 4.

Superior frame relay. Frame relay is the superior technology for supporting bursty LAN traffic over a Wide Area Network. Lucent provides the industry-leading frame relay implementation. For differentiated frame services, Lucent Priority Frame™ is a QoS solution that tightly integrates frame relay and ATM technologies, allowing you to deliver end-to-end service level guarantees—even for delay-sensitive applications. Three frame relay service classes with ATM-like QoS are available:

- Real-time Variable Frame Rate (rt-VFR)
- Non-real-time Variable Frame Rate (nrt-VFR)
- Available Frame Rate/Unspecified Frame Rate (AFR/UFR)

Using these service classes, service options are expanded, enabling you to offer differentiated, value-added services. For example, you may offer mission-critical SNA, high-quality packetized voice, prioritized Internet access and LAN interconnect, and real-time video.

Quality IP. IP Navigator MPLS is a carrier-class implementation of the emerging MPLS standard. Lucent IP Navigator™ MPLS integrates IP routing with carrier-class ATM or frame relay switching, to provide guaranteed bandwidth and end-to-end QoS for IP traffic. Combined with the industry-leading port density of the CBX 500 switch, IP Navigator MPLS enables unprecedented IP subscriber connection density. IP Navigator MPLS is a carrier-class implementation of the emerging MPLS standard.

Virtually unlimited scaling. Unlike the IP overlay networks, Lucent IP Navigator MPLS combines the best of Layer-2 switching and Layer-3 routing, and allows virtually unlimited scaling with its Multipoint-to-Point Tree (MPT) label switched path technology. Using distributed processing on each switch I/O module, IP Navigator allows QoS-aware routing to occur at the edges of the network along label switched paths through the core for all IP traffic. IP Navigator MPLS can support over 200,000 routes per module—more than triple the number of routes in today's Internet route table—using a full suite of IP routing protocols including BGP4, OSPF, MOSPF, and RIP.

Ethernet for server connections. In addition to IP connectivity over frame relay and ATM, the CBX 500 switch also supports IP over 10/100 Mbps Ethernet interfaces. Using Ethernet as a high-performance connection to Web, email, remote access servers, and other IP equipment, you can efficiently use precious central office space by connecting the switch directly to co-located IP resources.

Quality IP. Some of the new high-value services created by the industry's first "absolute" QoS for IP include:

- Virtual Private Networks (VPNs)
- IP Multicast Service
- Voice over IP (VoIP) Services
- Prioritized IP Access and LAN Interconnect

See Figure 5.

The Foundation for Next-Generation Networks

The carrier-class CBX 500 platform enables service providers to deliver the industry's highest availability and service capabilities in their next-generation networks. A fully integrated member of the Lucent multiservice core switching product family, the CBX 500 switch provides end-to-end service management and advanced availability and scalability features. By ensuring the highest network performance and resiliency, the CBX 500 Multiservice WAN Switch allows the stable and profitable delivery of high-value services.

For More Information

For more information about the CBX 500 Multiservice WAN Switch, visit www.lucent.com/

To learn more, contact your Lucent Technologies Representative, Authorized Reseller, or Sales Agent. Or, visit our Web sites. www.lucent.com

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Lucent Technologies
Bell Labs Innovations

There were two versions of the high-power CAP ADLU: one is powered across the CBA backplane (ADLUC1AS); the other is powered by the PDFA (ADLUC1BS). This ADLU type was called "high power" because the initial release of the linecard consumed relatively more power than later versions. The high-power CAP ADLU was superceded by the low-power CAP ADLU and is no longer available.

4.3.2 Low-Power CAP ADLU

The low-power CAP ADLU (designators ADLUC1CS and ADLUC1DS) is a more power-efficient version of the high-power CAP ADLU. The low-power CAP ADLU interoperates with the same CAP-based CPE as the high-power CAP ADLU. Other than the power reduction (allowing more lines to be serviced under NEBS power limitations), the low-power CAP ADLU has the same capabilities as the high-power version it replaces. Provisionable upstream and downstream rates are the same as for the high-power version shown in Table 4-1.

4.3.3 Dual-Line DMT ADLU with POTS

The dual-line DMT (discrete multi-tone modulation) ADLU provides support for two ADSL access lines. This ADLU is a "combo" card in that it provides POTS support for the two lines in addition to ADSL support. The linecard contains two DMT transceivers to support two ADSL subscribers simultaneously without traffic blocking. Two POTS splitters on the DMT ADLU divide the signal and pass the low frequency part to on-board POTS circuitry for conversion to a narrowband digital signal. This signal is cross-connected into the Litespan time-slot interchange (TSI) function for processing into a digital switch interface. The high frequency part of the subscriber line is passed to the DMT transceiver for that line. Performing all cross-connection among the subscriber line, the POTS splitter, the ADSL circuitry, and the POTS circuitry within the ADLU simplifies the installation of ADSL service, especially in an RT where a convenient cross-connect point (like the MDF in the CO) is not readily available.

The dual-line DMT ADLU can be provisioned to any combination of upstream and downstream rates. Upstream rates range from 32 Kbps to 832 Kbps in 32 Kbps increments; downstream rates range from 32 Kbps to 8,128 Kbps in 32 Kbps increments.

The POTS section of the "combo" ADLU is designed to operate with 18,000-foot loops using 26-gauge wire. The card has a 0dB and a -2dB pad allowing the transmission level to be set for CO short-reach and long-reach copper transmission. This design allows the combo card and ADSL to provide service to subscribers in CO or RT applications with long loop designs.

The dual-line DMT combo ADLU uses the first two circuit pairs available on the backplane. Table 4-4 describes how the ADLU connects to the backplane pairs.

Table 4-4. Dual DMT Combo ADLU Backplane Pair Usage

Pair one	ADSL/POTS (line 1)
Pair two	ADSL/POTS (line 2)
Pair three	POTS only (line 1) [Future]
Pair four	POTS only (line 2) [Future]

There are four versions of the dual-line DMT combo ADLU: a backplane-powered dual ADLU with POTS splitter and POTS (ADLUD2CP), a PDFA-powered dual ADLU with POTS splitter and POTS (ADLUD2DP), a backplane-powered dual ADLU with POTS splitter only (ADLUD2CS), and a PDFA-powered dual ADLU with POTS splitter only (ADLUD2DS). All four versions use backplane pairs one and two. The latter two versions, ADLUD2CS and ADLUD2DS will, when released, use backplane pairs three and four to return the analog portion of the signal for connection to an external POTS function (such as a Class 5 switch analog port). Backplane pairs three and four are not connected by the ADLUD2CP and ADLUD2DP.

4.3.4 Quad-Line DMT ADLU with POTS

The quad-line DMT ADLU is a "combo" card that provides support for four ADSL access lines. POTS service on the same twisted pair must be provided on the same card or using a POTS splitter external to the Litespan since all four backplane pairs are used for incoming signals and none remain to return the analog POTS-only signal from the internal POTS splitter (see Table 4-5 below). This linecard contains four DMT transceivers, four POTS splitters, and four digitizing POTS circuits.

Table 4-5. Quad DMT Combo ADLU Backplane Pair Usage

Pair one	ADSL/POTS (line 1)
Pair two	ADSL/POTS (line 2)
Pair three	ADSL/POTS (line 3)
Pair four	ADSL/POTS (line 4)

Four versions of the quad-line DMT combo ADLU are planned: a backplane-powered quad ADLU with POTS splitter and POTS at G.lite rates (ADLUG4AP), a PDFA-powered quad ADLU with POTS splitter and POTS at G.lite rates (ADLUG4BP), a backplane-powered quad ADLU with POTS splitter and POTS at all DMT rates (ADLUD4AP), and a PDFA-powered quad ADLU with POTS splitter and POTS at all DMT rates (ADLUD4BP).

The first two versions of the quad ADLU, running at G.lite rates, use transceiver ICs available in 1999. The second two versions of the quad ADLU, running both G.lite and "full rate" DMT, will follow using transceiver ICs expected to be available in 2000. The G.lite versions can be provisioned to any combination of upstream and downstream

rates with upstream rates ranging from 32 Kbps to 384 Kbps in 32 Kbps increments and downstream rates ranging from 32 Kbps to 1.544 Kbps in 32 Kbps increments. The full-rate versions can be similarly provisioned with upstream rates ranging from 32 Kbps to 832 Kbps in 32 Kbps increments and downstream rates ranging from 32 Kbps to 8.128 Kbps in 32 Kbps increments.

The Litespan ADSL capacities projected in Section 5 are the same for G.lite quad ADLUs and full-rate quad ADLUs. This is based on the assumption that between now and the release of full-rate DMT transceiver ICs, semiconductor technology will have reduced the size and power dissipation of these ICs to the same level as G.lite transceivers today even with the added rate capacity.

4.4 ADSL Customer Premises Equipment

To achieve data rates up to 8 Mbps on a voice-grade twisted pair several kilometers long requires sophisticated coding and decoding of the transmitted and received signals. The Litespan provides this functionality at the network end; a class of customer premises equipment (CPE) called ATU-Rs provides remote end processing. Each ADSL coding method requires compatible ATU-Rs for a complete ADSL service offering. Litespan supports both proprietary CAP-based devices and standard DMT-based devices. The devices available from Alcatel are described below.

If a service is offered that dedicates a subscriber drop to ADSL and therefore does not include analog POTS frequencies on the same drop, no POTS splitter function is required at the subscriber site. The more usual case takes advantage of ADSL's ability to coexist with POTS to run both services over the same wire pair. In this case, one of the two POTS splitter configurations shown in Figure 4-3 is used. In the upper right part of the Figure, the POTS splitter is shown installed in the NID at the signal entry point of the subscriber premises. The low-frequency output of the passive splitter device connects to inside wires serving POTS handsets. The high-frequency output of the splitter is connected (often with new wiring) to the ATU-R at its location (typically near the subscriber PC). Both Siecor and Keptel manufacture a NID product line that includes pluggable POTS splitter modules.

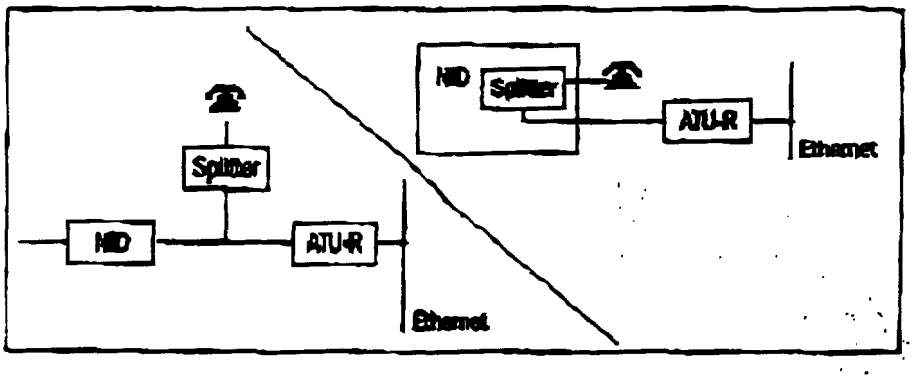

Figure 4-3. Alternate POTS Splitter Configurations

TAX ISSUES RELATED TO "PLUG AND PLAY" OPTION 1

The Staff also asked SBC to explain the tax implications of the CLEC, rather than the SBC ILEC, **owning** the combination plugs/cards located in remote terminals. Under the "plug and play" Option 1 as outlined in my February 15 letter, the SBC ILEC would install the combination ADLU plugs/cards and maintain an inventory of the cards on behalf of affiliated and unaffiliated CLECs, but the ADLU cards would be owned by the CLECs. Asset ownership drives various taxing requirements. For example, local, county, and state sales taxes, property, manufacturing, use and ad valorem taxes are implicated for any provider of service with asset ownership within the jurisdiction of those taxing entities.

The trigger for many of these tax assessments is when an asset is "placed in service", while other taxes are affected when an asset is taken "out of service". Consequently, under Option 1, the SBC ILEC and the affected CLECs who owned the plugs/cards would have to put in place what is anticipated to be a fairly complex and costly plug/card inventory tracking, reconciliation, and notification process in order to track by taxing jurisdiction – local municipalities, counties, and states; by carrier – potentially hundreds or thousands of plugs/cards per locality, across 13 states. The multiplier in this scenario could make such a process almost unmanageable for the SBC ILEC and for the CLECs. The processes and systems to manage such a requirement do not exist today for the SBC ILECs or for any CLECs to my knowledge. The process would be complicated enough just tracking the movement of thousands of cards in and out of service and tracking those movements back to the various taxing locations and specific companies, but could also be complicated by changes in various tax laws, changes in ownership of companies, changes of personnel that need to be contacted, manufacturer initiated changes to cards, and so on. In summary, if it is decided that the SBC ILECs can not own the combination plugs/cards under the merger conditions, the SBC ILECs, ASI and unaffiliated data CLECs will face tremendous challenges in dealing with the tax implications of that decision.